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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/723,181

**Applicant(s)**

RODRIGUEZ ET AL.

**Examiner**

STEVEN KAU

**Art Unit**

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 April 2009.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-21 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Response to Pre-Appeal Conference Request***

1. Applicant's arguments, see Reasons For Request For Pre-Appeal Review, received 20 April 2009, with respect to the rejections of claims 1-21 under 35 U.S.C. § 102(e) and § 103(a) have been fully considered and persuasive. Therefore, the final rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of newly discovered prior art(s). Thus, **the prosecution on the merits is reopened.**

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969). A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 17 are provisionally rejected under the judicially created doctrine of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 30 of copending Application No. 10/836094.

Claims 1 and 17 of the pending application (10/723181) and claims 1 and 30 of the co-pending application (10/836094) are summarized below:

NO.	Current Application 10/723,181	NO.	Co-pending Application 10/836,094
<b>Claim 1</b>	A method for analyzing an image of a printed object to determine whether the printed image is a copy or an original, the method comprising:	<b>Claim 1</b>	A method for analyzing an image of a printed object to determine whether the printed object is a copy or an original, said method comprising:
A	determining whether a machine readable auxiliary signal is embedded in the image, wherein the auxiliary signal is embedded at embedding locations using a set of two or more print structures that change in response to a copy operation, the change causing a divergence or convergence of a characteristic of the print structures	A	analyzing a machine readable auxiliary signal that is embedded in the image, wherein the auxiliary signal is embedded at embedding locations using a print structure that changes in response to a copy operation, the change causing a convergence of a characteristic such that the

	such that the machine readable signal becomes more or less detectable; and		machine readable signal becomes more detectable; and
B	based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original.	B	based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original.
17	A method for analyzing an image of a printed object to determine whether the printed image is a copy or an original, the method comprising:	30	A method for analyzing an image of a printed object to determine whether the printed object is a copy or an original, the method comprising:
A	determining whether a machine readable auxiliary signal is embedded in the image, wherein the auxiliary signal is embedded at embedding locations using a print structure that changes in response to a copy operation, the change	A	determining whether at least one of a first machine readable auxiliary signal and a second machine readable auxiliary signal is embedded in the image, wherein the first

	causing a divergence or convergence of a characteristic of the print structure such that the machine readable signal becomes more or less detectable, the print structure comprising a color that changes in response to a copy operation; and		auxiliary signal is conveyed using a first color and the second auxiliary signal is conveyed using a second color, the first and second colors being represented differently in response to a copy operation, the different representation providing a divergence or convergence of a characteristic of the colors such that the machine readable signals becomes more or less detectable; and
B	based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original.	B	based on evaluating the machine-readable auxiliary signals, determining whether the printed object is a copy or an original.

**With respect to claim 1 of '181**, both claims 1 of the pending application '181 and the co-pending application '094 teach a method for analyzing an image of a printed object to determine whether the printed image is a copy or an original. Both claims have identical steps, i.e. (1) determining or analyzing whether a machine readable auxiliary signal is embedded in the image and based on evaluating the machine readable auxiliary signal, and (2) determining whether the printed object is a copy or an original. The difference between the two claims are the limitation such that "wherein the auxiliary signal is embedded at embedding locations using a set of two or more print structures" in claim 1 of ' 181 and "wherein the auxiliary signal is embedded at embedding locations using a print structure" in claim 1 of co-pending application ' 094 (emphasis added by the examiner). As point out in both application, a print structure can be a set of line structures (Fig. 4 of both applications), or a set of color (Fig. 5 of both application). Thus, the limitation of "wherein the auxiliary signal is embedded at embedding locations using a set of two or more print structures" in claim 1 of ' 181 is fully anticipating the limitation of "wherein the auxiliary signal is embedded at embedding locations using a print structure" in claim 1 of the co-pending application '094.

Thus, claim 1 of the pending application '181 is rejected on the ground of nonstatutory obviousness-type double patenting.

**With respect to claim 17 of '181**, both claim 17 of '181 and claim 30 of '094 teach a method for analyzing an image of a printed object to determine whether the

printed image is a copy or an original. Both claims have identical steps, i.e. (1). determining whether a machine readable auxiliary signal, (or determining whether at least one of a first machine readable auxiliary signal and a second machine readable auxiliary signal is embedded in the image) is embedded in the image; and (2) based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original. The difference between the two claims are the limitation such that "wherein the auxiliary signal is embedded at embedding locations using a print structure that changes in response to a copy operation, the change causing a divergence or convergence of a characteristic of the print structure such that the machine readable signal becomes more or less detectable, the print structure comprising a color that changes in response to a copy operation" of claim 17 of '181 and "wherein the first auxiliary signal is conveyed using a first color and the second auxiliary signal is conveyed using a second color, the first and second colors being represented differently in response to a copy operation, the different representation providing a divergence or convergence of a characteristic of the colors such that the machine readable signals becomes more or less detectable" of claim 30 of '094 (emphasis added by the examiner). However, the conflicting claims are not patentably distinct from each other, because the limitations and the scope of claim 17 are substantially the same as claim 30 of '094, i.e. both claims teaching determining whether a machine readable auxiliary signal, and therefore, the print structure in claim 17 of '181 is an obvious version of claim 30 of '094. Thus, claim 17 of the pending application is rejected on the ground of nonstatutory obviousness-type double patenting.



The examiner notices that claim 1 of the co-pending application '094 has been withdrawn for examination by applicants. However, withdrawn claims are pending claims and therefore withdrawn claims are under consideration in application prosecution (unless claims are canceled because canceled claims are no longer in a pending state).

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-21 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent<sup>1</sup> and recent Federal Circuit decisions<sup>2</sup> indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claims recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example, claim 1 is directed to a method for analyzing an

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<sup>1</sup> *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

<sup>2</sup> *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

image of a printed object to determine whether the printed image is a copy or an original, and the steps recites, "determining whether a machine readable auxiliary signal is embedded in the image, wherein the auxiliary signal is embedded at embedding locations using a set of two or more print structures that change in response to a copy operation, the change causing a divergence or convergence of a characteristic of the print structures such that the machine readable signal becomes more or less detectable; and based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original." The applicant has not provided explicit and deliberate definitions of which particular apparatus is used for analyzing an image of a printed object to determine whether the printed image is a copy or an original, i.e. executing steps of "determining whether a machine readable auxiliary signal is embedded in the image", and "based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original", etc., or to limit the steps of "determining whether a machine readable auxiliary signal is embedded in the image", and "based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original", etc., for transforming underlying subject matter (such as an article or material) to a different state or thing. Thus, the method for analyzing an image of a printed object to determine whether the printed image is a copy or an original would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine, i.e. a set of algorithm or a set of procedures without a machine for execution. Claims 2-14 are dependent claims to claim 1, and are rejected

under 35 U.S.C. 101 because of its dependency to claim 1. Claims 15-21 are rejected under 35 U.S.C. 101 for the same reasons discussed above.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1, 2, 14, 15, 16 and 20-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Okubo (US 5,781,653).

Regarding claim 1.

Okubo discloses a method for analyzing an image of a printed object to determine whether the printed image is a copy or an original (i.e. **Fig. 3 discloses a method for identifying a suspected copy of an original**, col 5, line 50 to col 6, line 24), the method comprising: determining whether a machine readable auxiliary signal (i.e. **copy-inhibited pattern**) is embedded in the image (i.e. **referring to Fig 3, copy-inhibit pattern is determined by the copy-inhibited pattern detecting section 111, and details of how the copy-inhibited pattern detection is disclosed in col 5, line 50 to col 6, line 24, embodiment 1, and Figs. 12, 17, 18, 24 & 27 are embodiments 2, 3, 4, and 5, which disclose detecting copy-inhibited pattern**), wherein the auxiliary signal is embedded (i.e. **synthesized by synthesizing section 115 of Fig. 1**)

at embedding locations using a set of two or more print structures (i.e. **pixel density, edge area detection, white area size detection, screen tone, & line detection, etc.**) that change in response to a copy operation (i.e. **determining whether a black peak density within a certain area around object pixel data as a center is coincident to the prespecified black peak density of the copy-inhibited pattern or not, col 5, line 50 to col 6, line 24 and col 9, lines 7-26, etc.** ), the change causing a divergence or convergence of a characteristic of the print structures such that the machine readable signal becomes more or less detectable (i.e. **as a result of the steps of copy-inhibited pattern determination, i.e. density, edge, white area, line numbers comparing with thresholds, any alternation of these print structures make the machine readable signal, or pattern detectable, col 5, line 50 to col 6, line 24 and col 9, lines 7-26**); and based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original (i.e. **embodiment 2, referring to Figs. 13, 14 and 17, a process of determining, or evaluating the copy-inhibit pattern, or the machine readable auxiliary signal, the printed object is determined whether it is a copy of an original, col 12, line 31 to col 13, line 37**).

Regarding claim 2, in accordance with claim 1.

Okubo discloses wherein the set of print structures include a first color (e.g. **black color**) and a second color (e.g. white color) that change differently in response to a copy operation (i.e. **black peak detecting section and white area detecting section, col 5, lines 50-65**).

Regarding claim 14, in accordance with claim 1.

Okubo discloses a storage medium on which is stored instructions for performing the method of claim 1 (i.e. **referring to Figs. 1-14 of first embodiment, and col 9, lines 5-67, giving a system of Fig. 1, block diagrams of Figs. 3, 8, & 12, a process defined in Figs. 13 & 14; instruction stored in a memory is inherently required for determining whether a document is a copy or an original).**

Regarding claim 15.

Claim 15 is directed to a method claim which substantially corresponds to the steps of the method in claim 1. Thus, claim 15 is rejected as set forth above for claim 1.

Regarding claim 16, in accordance with 15.

Claim 16 is directed to a method claim which substantially corresponds to the steps of the method in claim 14. Thus, claim 16 is rejected as set forth above for claim 14.

Regarding claim 20.

Claim 20 is directed to a method claim which substantially corresponds to the steps of the method in claim 1. Thus, claim 20 is rejected as set forth above for claim 1.

Regarding claim 21, in accordance with 20.

Claim 21 is directed to a method claim which substantially corresponds to the steps of the method in claim 14. Thus, claim 21 is rejected as set forth above for claim 14.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) as applied to claim 2 above, and in view of Yule (US 2,748,190).

Regarding claim 3, in accordance with claim 2.

Okubo does not disclose wherein at least one of the colors corresponds to an ink color that is out of gamut of a printer or scanner.

Yule teaches wherein at least one of the colors corresponds to an ink color that is out of gamut of a printer or scanner (**i.e. dark blues have relatively high magenta and cyan contents but a very low yellow content; a black printer based on the yellow content which, in this case, is the least predominant one, results in a relatively light blue in the reproduction made up of a maximum cyan, a maximum magenta and a small amount of black; that is, dark blue is one of the colors that is out of gamut of a printer, col 1, lines 39-55).**

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein at least one of the colors corresponds to an ink color that is out of gamut of a printer or scanner as taught by Yule. The motivation for doing so would have been to enhance document security

protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) as applied to claim 2 above, and in view of Kimura et al (US 6,434,322).

Regarding claim 4, in accordance with claim 2.

Okubo does not disclose wherein a difference in luminance of the two colors changes in response to a copy operation.

Kimura teaches wherein a difference in luminance of the two colors changes in response to a copy operation (**i.e. luminance value is changed in the reproduction method, col 2, lines 51-67**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein a difference in luminance of the two colors changes in response to a copy operation as taught by Kimura. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) as applied to claim 1 above, and in view of Ostromoukhov et al (US 6,198,545).

Regarding claim 5, in accordance with claim 1.

Okubo does not disclose wherein the set of print structures include a first print structure having a first dot gain property and a second print structure having a second dot gain property; wherein the first print structure is more susceptible to dot gain than the second print structure in response to a copy operation.

Ostromoukhov teaches wherein the set of print structures include a first print structure having a first dot gain property and a second print structure having a second dot gain property (**i.e. variations of the halftoning period are useful to prevent non authorized copies of images produced in this manner; this is due to the fact that small screen dots and large screen dots are subjected to a different dot gain during reproduction, col 9, lines 5-26**); wherein the first print structure is more susceptible to dot gain than the second print structure in response to a copy operation (**i.e. referring Figs. 20 & 21, two different print structure gives different result and one is more susceptible than the other; col 9, lines 5-26**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein a difference in luminance of the two colors changes in response to a copy operation as taught by Ostromoukhov. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.



11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) as applied to claim 1 above, and in view of Coonan et al (US 5,687,297).

Regarding claim 6, in accordance with claim 1.

Okubo does not disclose wherein a difference in luminance of the print structures changes in response to a copy operation due to a difference in susceptibility to dot gain of the print structures.

Coonan teaches wherein a difference in luminance of the print structures changes in response to a copy operation due to a difference in susceptibility to dot gain of the print structures (i.e. **applying augment compact dot grow mode to detect an edge or brightness transition between a target and any of its adjacent relative of the neighboring pixels; that is, a difference in luminance of the print structures changes in response to a copy operation due to a difference in susceptibility to dot gain of the print structures; col 10, lines 28-56**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein a difference in luminance of the print structures changes in response to a copy operation due to a difference in susceptibility to dot gain of the print structures as taught by Coonan. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

12. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) as applied to claim 1 above, and in view of Burnham et al (US 4,884,828).

Regarding claim 7, in accordance with claim 1.

Okubo does not disclose wherein the set of print structures include a first print structure having a first aliasing property and a second print structure having a second aliasing property; wherein the first print structure aliases differently than the second print structure.

However, Burnham teaches wherein the set of print structures include a first print structure having a first aliasing property and a second print structure having a second aliasing property (**i.e. referring to the drawing, it disclose different moiré pattern lines**); wherein the first print structure aliases differently than the second print structure (**i.e. referring to the drawing, moire patterns have hitherto provided a satisfactory degree of security against counterfeiting, col 1, lines 9-26 and line 62 to col 2, line 26**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein the set of print structures include a first print structure having a first aliasing property and a second print structure having a second aliasing property; wherein the first print structure aliases differently than the second print structure as taught by Burnham. The motivation for doing so would have been to enhance document security protection and to detect

whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

Regarding claim 8, in accordance with claim 1.

Okubo does not disclose wherein the auxiliary signal is embedded by varying continuity of line structures.

Burnham teaches wherein the auxiliary signal (**i.e. moiré patterns**) is embedded by varying continuity of line structures (**i.e. referring to the drawing and col 1, lines 14-25 and col 4, lines 61-67, lines of moiré pattern vary progressively in thickness along their length, and subject to small-scale or large-scale changes**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein the auxiliary signal is embedded by varying continuity of line structures as taught by Burnham. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

13. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) in view of Burnham et al (US 4,884,828) as applied to claim 8 above, and further in view of Castagnoli (US 5,074,596). Regarding claim 9, in accordance with claim 8.

Okubo does not disclose wherein one print structure comprises a line segment in a first color, and another print structure comprises a line segment in another color.

Castagnoli teaches wherein one print structure comprises a line segment in a first color, and another print structure comprises a line segment in another color (i.e. **referring to Figs. 1-9, line segments with different color designs; col 3, lines 12-18 and col 4, lines 18-61**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo and Burnham to include wherein one print structure comprises a line segment in a first color, and another print structure comprises a line segment in another color as taught by Castagnoli. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

Regarding claim 10, in accordance with claim 9.

Okubo does not disclose wherein the line segments of the different colors are arranged by varying between the first and second colors along a printed line.

Castagnoli teaches wherein the line segments of the different colors are arranged by varying between the first and second colors along a printed line (i.e. **referring to Figs. 5 and 5a, line segments have alternately different colors, Abstract, and col 4, lines 40-61**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo and Burnham to include wherein the line segments of the different colors are arranged by varying between the first and second colors along a printed line as taught by Castagnoli. The motivation for doing so would

have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

14. Claims 11, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) as applied to claim 1 above, and in view of Umeda (US 7,027,189).

Regarding claim 11, in accordance with claim 1.

Okubo does not disclose wherein the evaluating includes evaluating a frequency domain metric to detect changes in the print structures.

Umeda teaches wherein the evaluating includes evaluating a frequency domain metric to detect changes in the print structures (**i.e. increase of power in low-frequency domain degrades the image quality and therefore a counterfeit is detected, col 4, line 28 to col 5, line 41 and Fig. 10**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein the evaluating includes evaluating a frequency domain metric to detect changes in the print structures as taught by Umeda. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

Regarding claim 12, in accordance with claim 11.

Okubo does not disclose wherein the frequency domain metric is a radial frequency domain metric.

Umeda teaches wherein the frequency domain metric is a radial frequency domain metric (**referring to Figs. 8A-C, and 9A-C, which disclose radial frequency domain, col 4, lines 39-64**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein the frequency domain metric is a radial frequency domain metric as taught by Umeda. The motivation for doing so would have been to enhance frequency domain detection by evaluating the power distribution and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

Regarding claim 13, in accordance with claim 1.

Okubo does not disclose wherein the frequency domain metric is used to evaluate changes in color of a print structure.

Umeda teaches wherein the frequency domain metric is used to evaluate changes in color of a print structure (**i.e. referring to Fig. 10, evaluating power spectrum of color component for dot-pattern, col 5, lines 13-41**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein the frequency domain metric is used to evaluate changes in color of a print structure as taught by Umeda. The motivation for doing so would have been to enhance frequency domain detection by evaluating the power spectrum of a color component and to detect whether a printed

copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

15. Claims 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) in view of Yule (US 2,748,190).

Regarding claim 17.

Okubo discloses a method for analyzing an image of a printed object to determine whether the printed image is a copy or an original (i.e. **Fig. 3 discloses a method for identifying a suspected copy of an original, col 5, line 50 to col 6, line 24**), the method comprising:  
determining whether a machine readable auxiliary signal (i.e. **copy-inhibited pattern**) is embedded in the image (i.e. **referring to Fig 3, copy-inhibit pattern is determined by the copy-inhibited pattern detecting section 111, and details of how the copy-inhibited pattern detection is disclosed in col 5, line 50 to col 6, line 24, embodiment 1, and Figs. 12, 17, 18, 24 & 27 are embodiments 2, 3, 4, and 5, which disclose detecting copy-inhibited pattern**), wherein the auxiliary signal is embedded (i.e. **synthesized by synthesizing section 115 of Fig. 1**) at embedding locations using a print structure (i.e. **pixel density, edge area detection, white area size detection, screen tone, & line detection, etc.**) that changes in response to a copy operation (i.e. **determining whether a black peak density within a certain area around object pixel data as a center is coincident to the prespecified black peak density of the copy-inhibited patter or not, col 5, line 50 to col 6, line 24 and col 9, lines 7-26, etc.**

), the change causing a divergence or convergence of a characteristic of the print structure such that the machine readable signal becomes more or less detectable (i.e. **as a result of the steps of copy-inhibited pattern determination, i.e. density, edge, white area, line numbers comparing with thresholds, any alternation of these print structures make the machine readable signal, or pattern detectable, col 5, line 50 to col 6, line 24 and col 9, lines 7-26**); and based on evaluating the machine readable auxiliary signal, determining whether the printed object is a copy or an original (i.e. **embodiment 2, referring to Figs. 13, 14 and 17, a process of determining, or evaluating the copy-inhibit pattern, or the machine readable auxiliary signal, the printed object is determined whether it is a copy of an original, col 12, line 31 to col 13, line 37**).

Okubo does not disclose that the print structure comprising a color that changes in response to a copy operation.

Yule teaches that the print structure comprising a color that changes in response to a copy operation (i.e. **dark blues have relatively high magenta and cyan contents but a very low yellow content; a black printer based on the yellow content which, in this case, is the least predominant one, results in a relatively light blue in the reproduction made up of a maximum cyan, a maximum magenta and a small amount of black; that is, dark blue is one of the colors that is out of gamut of a printer, col 1, lines 39-55**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include that the print structure



comprising a color that changes in response to a copy operation as taught by Yule. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

Regarding claim 19, in accordance with claim 17.

Okubo discloses a storage medium on which is stored instructions for performing the method of claim 1 (i.e. **referring to Figs. 1-14 of first embodiment, and col 9, lines 5-67, giving a system of Fig. 1, block diagrams of Figs. 3, 8, & 12, a process defined in Figs. 13 & 14; instruction stored in a memory is inherently required for determining whether a document is a copy or an original**).

16. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo (US 5,781,653) in view of Yule (US 2,748,190) as applied to claim 17 above, and further in view of Burnham et al (US 4,884,828).

Regarding claim 18, in accordance with claim 17.

Okubo does not disclose wherein the auxiliary signal is embedded by varying continuity of line structures.

Burnham teaches wherein the auxiliary signal (i.e. **moiré patterns**) is embedded by varying continuity of line structures (i.e. **referring to the drawing and col 1, lines 14-25 and col 4, lines 61-67, lines of moiré pattern vary progressively in thickness along their length, and subject to small-scale or large-scale changes**).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Okubo to include wherein the auxiliary signal is embedded by varying continuity of line structures as taught by Burnham. The motivation for doing so would have been to enhance document security protection and to detect whether a printed copy is a copy or an original; and further it is easily implemented by one or other in the art with a predictable result.

***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on M-F, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Steven Kau/  
Examiner, Art Unit 2625  
05/19/2009

/David K Moore/  
Supervisory Patent Examiner, Art Unit 2625